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DISTRIBUTION OF THE MOCKINGBIRD IN CALIFORNIA.

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With map.

PROBABLY the passerine bird most favorably and extensively known to the people of California is the Western Mockingbird (*Mimus polyglottos leucopterus*). This species has earned its reputation by its song of extraordinary loudness and persistency, so that more than any other native bird of the same habitat has it impressed its hearers with its presence. The occurrence of the Mockingbird is associated in the popular mind with the orange groves of southern California. The following distributional study shows this idea to be based upon a good deal of fact.

The northernmost known occurrence of the Mockingbird in California is in the upper Sacramento Valley, a little below the 40th parallel of latitude: An individual is recorded as having been observed at Chico, Butte County, February 10, 1884 (Belding, Land Birds Pac. Dist., Sept., 1890, p. 226). Next south of this point its presence has been noted at Gridley, Butte County, July 22, 1885 (Belding, l. c.). At Marysville, Yuba County, and Marysville Buttes, Sutter County, the Mockingbird was formerly found nesting (Belding, Proc. U. S. Nat. Mus., I, 1879, p. 396; Belding, Land Birds Pac. Dist., Sept., 1890, p. 226). The above four records

¹ A contribution from the Museum of Vertebrate Zoölogy of the University of California.

are all we have from the Sacramento Valley, and since recent inquiry of persons living in that region has failed to elicit positive evidence of its occurrence there at the present time, it is fair to conclude that the species has not found the conditions sufficiently congenial to bring about its establishment there as a regular component of the avifauna. (See Map.)

Continuing to the southward in central California, Stockton is the next record station. Here the bird has been observed in both winter and summer, though in small numbers (Belding, l. c.). In the foothills of Calaveras County (Big Trees and Copperopolis) it has been noted rarely (Belding, l. c.). From the vicinity of Merced south through the San Joaquin Valley to the region about Bakersfield, the Mockingbird is well known as a common resident and breeding species in favorable places; and as the plains are being reclaimed for orchards and ranches, the range of the Mockingbird is enlarging and covering the region more continuously. On the east side of the valley, next to the foothills, the conditions are apparently most favorable. This general information has been gathered from several separate and reliable sources.

While record stations would appear to show a continuity of breeding range from the San Joaquin area through the Tehachapi and Walker passes to the Mojave Desert, it is not at all certain that this is the case. It is not apparent from the literature at hand whether records are of birds actually nesting, or of mere stragglers. If the latter, their significance is not important in this connection.

It is quite certain that portions of the breeding range of the Mockingbird, even within California, are wholly disconnected from others. This is obviously true in the case of Santa Cruz, Santa Catalina and San Clemente Islands, on each of which the species is known to breed. Although occurring on these islands in winter as well as in summer, it is not safe to assert that individuals do not pass back and forth between islands, and from the islands to the mainland. This crossing is certainly but little less to be expected than the apparent wintering on the Mojave and Colorado deserts of individuals which summer a hundred or more miles distant in the Panamint and adjacent mountains. No differences have been detected between specimens of the Mockingbird from different portions of its range in California, even those from the islands

being indistinguishable from examples from the San Diegan district and from the deserts.

The distribution of the Mockingbird east of the Sierran divide is evidently modified more by season than is the case anywhere on the Pacific slope of California. It would appear from a consideration of all the records of the species so far available that it occurs in summer chiefly if not altogether on the slopes of the mountains, dropping into the adjacent valleys in winter, and at that season even extending, in small numbers, by a veritable migratory movement, south over the Mojave Desert.

The northernmost record east of the Sierras is from the heads of Owens River and Owens Valley, about latitude $37^{\circ} 40'$ (Fisher, N. Am. Fauna, No. 7, May, 1893, p. 127). Thence south through Owens Valley and along the ranges to the eastward there are a number of summer records. Though observed in Death Valley in January and April, not a single one was found there in June (Fisher, l. c.).

No positive information is at hand indicating that the species breeds in the lowest and hottest parts of the southwestern deserts, where, however, it occurs in winter. Exploration along the valley of the lower Colorado River by the expedition of the Museum of Vertebrate Zoölogy in 1910 showed the Mockingbird to be common there from February to April; but there were no indications that the individuals were about to nest in the region. On the contrary everything pointed towards their being winter visitants from a breeding area elsewhere.

The only record-station in the coast region north of San Francisco Bay is San Geronimo, Marin County. Mailliard (Auk, XV, April, 1898, p. 197) records a male specimen taken there December 30, 1894. In the coast region south of San Francisco Bay, beginning at the north, we have the following records. Redwood City: specimen taken September 5, 1891; "rarely seen here; I have met with but three others during the past twenty-five years" (Littlejohn, Zoe, III, Jan., 1893, p. 362). Stanford University: male specimen secured February 17, 1893 (Van Denburgh, Proc. Am. Philos. Soc., XXXVIII, Nov., 1899, p. 177); individual seen December 20, 1904, and "for a week or two subsequently" (Fisher, Condor, VII, March, 1905, p. 55). Haywards, Alameda County:

November 28, 1888, and for a month or so thereafter, one individual; October, 1894, to April, 1895, one individual continuously; November, 1895, one individual; November 2, 1896, to spring of 1897, one individual all winter (Emerson, Bull. Cooper Orn. Club, I, March, 1899, p. 27); November, 1904, to March 4, 1905, one individual all winter (Emerson, Condor, VIII, March, 1906, p. 51). Watsonville, Santa Cruz County: specimen taken September 17, 1903 (Hunter, Condor, VI, Jan., 1904, p. 25). Paicines, San Benito County, "sparingly winter resident" (Mailliard, Condor, III, Sept., 1901, p. 126). Salinas Valley, "near Monterey," in small numbers (Cooper, Orn. Calif., 1870, p. 21). Paso Robles, San Luis Obispo County, "quite a number" in winter; one pair known to have nested; thought to be increasing (Thompson, Condor, II, July, 1900, p. 89). San Simeon, San Luis Obispo County, one seen July 20, 1905 (Jenkins, Condor, VIII, Sept., 1906, p. 129). Wasioja, Santa Barbara County, seen in December, 1909 (Rowley, MS).

The last three records are the southernmost in the central coast region of California, that is, in the region north of Santa Barbara. Paso Robles is the only breeding station known to me in all that area. This point being in the southern Salinas Valley and separated from the coast belt proper by a mountain range, probably possesses climatic features most nearly like those due east in the parallel valley of the San Joaquin. It will have been noted that all the rest of the records are for fall and winter birds. This would appear to indicate a slight migration west-and-east from the San Joaquin Valley, possibly involving birds-of-the-year only. Originally the Mockingbird of California was probably distinctly migratory; those lines of descendants finding themselves in the areas of most equable climate have come to a standstill. This would appear to me to be more probable than that the traces of migration observable at the present time are the beginnings of a general migratory habit which may become established in the future. It is notable that as a rule records farthest away from the normal breeding range, even the northernmost, are of fall and winter occurrences.

From Santa Barbara southeastward throughout the San Diegan faunal district the Mockingbird is well known as an abundant

breeding species and permanent resident. It is in this San Diegan district, more particularly about suburban gardens and citrus orchards, that the species appears to thrive better than elsewhere in California. Moreover, the bird is becoming more and more abundant as the region is brought into a higher state of cultivation. In Los Angeles County during the past twenty years I have witnessed the continued increase both in its numbers and the area inhabited by it.

Originally a bird of the wide, open "wash," or arroyo, sparsely dotted with small live oaks, clumps of elder and sumach, and patches of prickly-pear cactus, the Mockingbird has now come to be the most conspicuous avian tenant of the highly cultivated orchard and garden. The original habitat of the bird, to which it was restricted, is of scarcely less extent now than formerly; and Mockingbirds are still to be found there in numbers which appear to me not materially greater or less than twenty years ago. But an area of several times this extent, which was formerly either bare grass-land or else thickly covered with chaparral, and in either case at that time unoccupied by the Mockingbird, has now been altered by cultivation until it evidently affords an attractive and permanent abode. Many an area in the vicinity of Pasadena, where fifteen years ago such birds as Horned Larks, Meadowlarks, Lark Sparrows and Burrowing Owls abounded, now know these species no more; but the Mockingbird is in evidence in every block. As a specific instance, all that area of North Pasadena between Monk Hill and Devil's Gate was once pasture land or at best a grain field, where I never saw a Mockingbird. A recent drive through the same section, now a populous suburb, disclosed the presence of the Mockingbird in numbers.

The Mockingbird is accordingly one of the relatively few species of birds which have not only withstood the effects of cultivation, but which have notably increased as a result of it. In looking over a map of the Pacific slope of Los Angeles County, knowing as I do the local conditions both now and formerly in much of that area, I believe I am conservative in estimating that the Mockingbird now occupies five times the area that it originally did. In other words there are now fully five times as many Mockingbirds in the region as formerly. I believe similar conditions to hold

true with regard to many other parts of the San Diegan faunal district.

The so-called citrus belt seems to be the metropolis of the Mockingbird. The citrus belt lies in a portion of the Lower Sonoran zone possessing a semi-arid climate, and in which, although the summers are hot, the annual range of temperature downward is not so great as to bring killing frosts. A law was long ago formulated by C. H. Merriam (*Nat. Geog. Mag.*, VI, 1894, p. 236) to the effect that the northward distribution of animals and plants is determined by the sum of the positive temperatures for the entire season of growth and reproduction, and that the southward distribution is governed by the mean temperature of a brief period during the hottest part of the year. The range of the Mockingbird appears to be accounted for under the first portion of this law, though not altogether. The bird is of Austral origin, and in California is but slightly or not at all migratory. The upward extension of its breeding range is clearly limited by the temperature conditions obtaining for a large portion of the year, including the summer, at the upper edge of the Lower Sonoran zone. Its winter range is the same except (1) that there is a scattering movement of birds-of-the-year in the autumn, leading to their appearance during the early winter in the warmer central coast belt of California; and (2) that there is a vertical movement in the Mojave Desert and Death Valley regions as an escape from the cold of the interior concomitant with altitude. It is doubtless the severity of the winter climate, in other words the normal dropping of the temperature below the freezing point, that accounts for the relative scarcity of Mockingbirds on the higher deserts of southeastern California, where Lower Sonoran conditions find their extreme in summer.

That food is not a prime factor in the case, as it clearly is in controlling the winter distribution of certain other birds, is shown by the fact that the Mockingbird is pre-eminently a berry-eater, especially throughout the fall and winter. On parts of the Mojave Desert mistletoe thrives and produces enormous crops of its berries which in other localities, namely those of warmer winters, form a favorite food of the Mockingbird. But this abundant food is still not a sufficient attraction to overbalance the repelling effect of the cold. Yet the latter is not sufficient to affect adversely other